

MULTIPLE EFFECTS OF PERFORMANCE-CONTINGENT PAY FOR WAITPERSONS

JAMES T. GEORGE

KANSAS STATE UNIVERSITY

B. L. HOPKINS

UNIVERSITY OF KANSAS

The owners of three restaurants requested help with the pay of waitpersons who were paid by the hour. The waitpersons asked for raises which the owners said they could not afford. This research changed the method of compensating waitpersons by making their pay contingent on dollars of food sold. Increased productivity and increased earnings per hour of work for all of the waitpersons followed the beginning of the performance-contingent pay. Most of the waitpersons also earned increased take-home pay when the performance-contingent pay began. There was little improvement in labor costs per dollar of food sold, a measure of benefit to the owners. The fact that benefits to workers occurred without benefits to owners is contrary to common views about the effects of performance-contingent pay.

DESCRIPTORS: pay, money, incentives, performance, earnings

The owners of a chain of restaurants appealed for help in working with their waitpersons. Many of the waitpersons were complaining that they were underpaid. However, the restaurant owners replied to requests for pay increases with the observation that the restaurants were losing money and that they could not afford raises unless the waitpersons became more productive. The waitpersons argued, in turn, that, because of their poor pay, they felt no obligation to be more productive. The authors suggested that some method of performance-contingent pay might increase productivity and pay raises might be financed out of the improved productivity with no cost to the company. A review of the research literature indicated that there has been widespread hope that performance-dependent pay produces improved productivity but revealed

limited and mixed evidence for the relationships among performance-dependent pay, productivity, and worker and company benefits.

In a recent editorial in this journal, Bailey (1987) wrote that many banks are using performance-contingent pay and are reporting increases in employee productivity that range from 25% to 100% or more. This is not the first time performance-contingent pay has stirred the interests of business managers in the United States. Early in this century Frederick W. Taylor (1911) claimed that his methods of "scientific management" that prominently featured a particular form of performance-contingent pay called piece-rate pay produced from 33% to 100% improvements in productivity.

Several reviewers have noted that piece-rate pay became very popular in U.S. manufacturing industries during the first decades of this century (Alford, 1940; Loudon, 1944; Lytle, 1929). The initial popularity of piece-rate performance-contingent pay, however, soon diminished. Members of a special congressional investigating committee denounced piece-rate pay (U.S. House of Representatives, 1912). Trade unions reviled it (Copley, 1923; Nadworny, 1955), and, finally, the report of the famous Hawthorne experiments declared that, "None of the results . . . gave the slightest

This research was supported by the company cooperating with it, by Kansas State University, and by the University of Kansas.

We appreciate the help of Sue Young in preparing the line drawings for the figures and of Ethel Hopkins in editing the manuscript.

Correspondence and requests for reprints may be sent to either James T. George, Department of Management, Calvin Hall, Kansas State University, Manhattan, Kansas 66506, or B. L. Hopkins, Department of Psychology, Auburn University, Auburn, Alabama 36849.

substantiation to the theory that the worker is primarily motivated by economic interest" (Roethlisberger & Dickson, 1939, pp. 575–576).

The exact reasons for the decline in popularity of piece-rate pay (Lewis, 1960) were surely complex and multiple but they, at least, involved suspicions that such pay exploited employees (Dartnell Corporation, 1948), benefited managers and owners more than employees (Sinclair, 1911), and led to improved productivity that resulted in declines in employment (Mathewson, 1931).

Reviewers of incentive pay methods commonly assume that performance-contingent pay, in comparison to hourly pay, provides greater productivity and reduced labor costs that benefit employers (e.g., Patten, 1977). However, much of the literature on the effects of performance-contingent pay on productivity involves only survey data collection in which company representatives are asked whether their companies use incentive pay systems and whether they have benefited from doing so (e.g., Fine, 1973; International Labour Office, 1951). Locke, Feren, McCaleb, Shaw, and Denny (1980) noted that such surveys involve only uncontrolled case studies and that the interventions that are identified as performance-contingent pay actually often include many confoundings such as management training and improved equipment that are introduced along with the contingent pay. In addition, Marriott (1968) observed that much of the survey data has been collected at conferences and questioned the reliability of company representatives' reports under such circumstances.

Much of the experimental literature supporting the assumption that contingent pay improves productivity has involved only simulations (e.g., Campbell, 1984; Cherrington, Reitz, & Scott, 1971; Yukl, Wexley, & Seymour, 1972). Moreover, most field experiments have used AB designs (e.g., Abernathy, Duffy, & O'Brien, 1982; Freedman, 1985; Gaetani, Hoxeng, & Austin, 1985; Rothe, 1970; Wyatt, Frost, & Stock, 1934). Campbell and Stanley (1963) have noted that AB designs (pretest-posttest designs in the nomenclature used by Campbell and Stanley) are vulnerable to several extraneous variables that can jeopardize inferences that

effects are due to independent variables. Regression effects are particularly likely in AB designs involving subjects who are selected for the research because they have a particular problem. The existence of a problem implies that the data of these subjects are extreme and are likely to be less extreme in the future as a function of whatever variables are responsible for pretreatment variation of the data. Therefore, improvements in the data may simply represent continuation of pretreatment variability rather than results of the independent variable. Field experiments with more elaborate designs that control for possible regression to the mean have combined money with other rewards such as time off from work or vacation trips (Luthans, Paul, & Baker, 1981; Luthans, Paul, & Taylor, 1985).

The case for contingent pay benefiting workers is even more limited. Only a few surveys have asked about take-home pay as well as productivity. For example, Pencavel (1977) wrote that Chicago-area companies reported that punch press operators who were paid performance-contingent incentives earned 7% more than cohorts paid by the hour. Five hundred companies in the footwear and men's clothing industries reported that workers who were paid piece rates made from 3% less to 40% more than those paid by the hour (Seiler, 1984). One of the field experiments employing an AB design reported gains in pay with contingent pay (Freedman, 1985).

In summary, methodological problems, particularly the use of experimental designs that do not support strong inferences about functional relationships, the failure to examine the extent to which the findings of simulation research generalize to actual work conditions and subjects, and the failure to determine the validity of survey data, seriously limit the conclusions that can be drawn regarding the effects of performance-contingent pay on both company and worker benefits. Field research employing appropriate experimental designs is needed to evaluate the impact of performance-contingent pay on directly and reliably measured important phenomena such as productivity, wages, and profits.

In the present study, the restaurant owners ac-

cepted the authors' proposal that the waitpersons' pay methods be changed from hourly pay to performance-dependent pay. This permitted an experimental examination, with replications and under relatively controlled conditions, of the effects of contingent pay on productivity, worker earnings, and company benefits.

METHOD

Subjects and Settings

The subjects were the waitpersons employed by a restaurant company. The owners of the company agreed to cooperate with the research, conditional on the name of the company being kept confidential. The subject pool initially included all of the 60 waitpersons employed in three full-service, family-style restaurants in the chain of 12 restaurants owned by the company which held local franchises from a national restaurant company. During the research 31 of the workers were not employed both before and after the change in pay methods; therefore, data of these 31 individuals are not included in the results. None of these individuals indicated that they were leaving because of the research. The rate of leaving, averaged over all weeks of data collection, was slightly lower than the company's historical average of about five waitpersons per week for the three restaurants. Twenty-nine waitpersons worked throughout the experiment and were the subjects of the research. Ten of these worked in Restaurant A, 9 in Restaurant B, and 10 in Restaurant C. The researchers promised all waitpersons that their names would be kept confidential.

A trainer, employed by the restaurant chain, trained all 29 subjects in 8-hr-long, service-oriented training sessions in the restaurants where they worked. This training consisted of showing employees the proper procedure for checking in and out for a work shift; discussing menu options; modeling serving techniques and taking orders, filling out customer tickets, placing orders with the cooks, and food delivery; explaining payroll information; and fitting, wearing, and care of uniforms.

Restaurant A was located in a rural community with a population of 11,000, approximately 30

miles from a major metropolitan area. Restaurant B was located in a town with a population of 34,900 and was approximately 40 miles from the same metropolitan area as Restaurant A. Restaurant C was located in a town of 11,200 population, was immediately adjacent to a 60-room motel, and functioned as the motel's restaurant. The three restaurants were similar in design and had identical menu offerings. All three operated from 6:00 a.m. until 1:00 a.m. daily on a 7-day-a-week schedule.

Data Collection

The shift manager recorded, on a weekly payroll sheet, all employees' starting times as they reported to work and their ending times when they finished work. The executive manager in each restaurant forwarded these figures to the company payroll office, which accumulated them and returned the totals in a weekly report. These figures were used to determine the number of hours worked by each waitperson. The payroll office also multiplied the number of hours worked by each waitperson's pay rate, and, after making standard withholdings required by law, provided a figure for the person's pay for the week. These figures were used to determine each waitperson's total pay and earnings per hour (calculated by dividing total pay by number of hours worked).

A waitperson, upon reporting to work, took a book of sequentially numbered order tickets and marked the first ticket with his or her name, the date, and "start." A waitperson took a customer's order by marking tallies on customer tickets by the names of the items ordered. The order was then entered into the cash register-computer by depressing keys corresponding to the items ordered. The register-computer then printed the items ordered, their prices, and the total price onto the ticket. The waitperson then took the ticket to the kitchen where the meal was prepared.

As a waitperson checked out from work the last ticket marked with that person's name, the date, and "stop" was inserted into a printing mechanism built into the cash register-computer, which then printed the total sales for that person for that day on the ticket. The restaurant manager also for-

warded these figures to the company office, which incorporated them into weekly reports that reflected, among other information, sales on each day. The figures from these weekly reports were used to determine each waitperson's daily sales.

The total dollars of sales per hour worked and wages paid per dollar of sales were also calculated for all individual waitpersons in each restaurant from the above figures. These data were then aggregated over waitpersons to provide figures for sales per hour worked and labor costs per dollar of sales for each restaurant.

Reliability

Several procedures protected the reliability of the data. The shift manager and waitperson examined the recorded start and stop times and signed the record to verify that entry. In addition, the first author visited each restaurant each day with the order of visitations determined randomly. He independently kept data on start and stop times that occurred while he was in a restaurant. This yielded a check on 25% of the figures. He compared these figures to the record produced by the manager and waitpersons and found no discrepancies greater than 5 min during the experiment. The first author compared the daily hours worked to those on the weekly reports provided by the company office and found them to be in perfect agreement, and also checked the gross pay as recorded on the weekly reports by multiplying the figures for hours worked by the pay rates and found no errors in calculating pay.

For 15% of the orders placed by waitpersons while he was in a restaurant, the first author checked the food prepared by the kitchens and found perfect correspondence between the customer tickets and the food prepared. In addition, there were no instances, during the first author's presence, in which customers complained that they were charged for food they didn't order or failed to receive food they ordered. Tickets were paid by customers to a cashier or the shift manager rather than to a waitperson.

As each sale was entered, a written record was made by the computer on a detail tape inside the computer. At the end of each shift, the shift man-

ager compared the tickets of each waitperson against the detail tape to ensure that there was a ticket for every entry into the computer. At the end of each day, the manager balanced the money in the cash register against the computer record of the total price of all food ordered. There were no discrepancies between these two numbers during the experiment. The weekly sales figures prepared by the company office for each waitperson were compared to the sum of the daily totals printed on the stop tickets, and no differences were found.

Baseline

At the beginning of data collection, all of the waitpersons worked for hourly wages and most earned \$1.90 per hour, the federal minimum wage for waitpersons. Contingent on seniority and the recommendations of the restaurant managers, a few earned above minimum wage with the highest pay being \$3.50 per hour. There was a negative correlation between pay and dollars of food sold by waitpersons. All waitpersons were free to keep all of the tips they received.

Intervention

The intervention consisted of paying the waitpersons 7% of their gross sales. This figure was arrived at in consultation with company owners. Among the factors that were considered in arriving at this 7% figure was an executive management review suggesting that individual restaurants could be profitable if the total pay for waitpersons approximated 7% of gross sales; restaurants exceeding this level of pay were usually unprofitable. Additionally, devoting 7% of income to paying waitpersons was consistent with pay rates in the national franchising company of which the local chain was a part and with restaurant-industry surveys of labor costs for family-style restaurants. Finally, casual observations suggested that waitpersons could easily handle more than the \$27.14 in sales per hour that would be required for them to earn, under performance-contingent pay, an amount at least equal to the \$1.90 per hour wage required by federal minimum wage law. Therefore, if waitpersons were

paid 7% of their gross sales, most of them should have been able to make more than they had been previously paid.

Because payroll checks were prepared by an independent service company whose computer system could not accommodate pay that was not based on hourly pay rates, we developed an alternative method that made pay contingent on sales but allowed the restaurant managers to report the actual hours worked by each waitperson. Each restaurant manager adjusted their waitpersons' pay rates every 2 weeks so that the hourly pay rate during the successive 2-week-long pay period was whatever rate would have yielded pay equivalent to 7% of gross sales during the preceding 2 weeks. This method resulted in pay that was dependent on sales, approximated 7% of sales, but was seldom exactly 7% of sales. The service company prepared the checks with which waitpersons were paid and sent them to the restaurants every 2 weeks. The first author reviewed every check for the waitpersons and found that all were correctly prepared.

At the beginning of the intervention, the first author and the three restaurant managers described the new method of pay to the waitpersons individually and in small groups. Because there were several questions about the way in which amount sold during one pay period affected rates of pay during the following pay period, the first author, at the beginning of the second day of the intervention in each of the restaurants, posted a table by the manager's office. This table included the waitpersons' names, the daily total dollars sold by each waitperson, 7% of the total dollars sold each day, the total hours worked, and the equivalent hourly rate of pay. The first author discussed the table and entries with each of the waitpersons when the table was posted.

Design

The intervention occurred in the three restaurants according to a multiple baseline design (Baer, Wolf, & Risley, 1968). The authors recorded baseline data in all three restaurants during Weeks 1 through 6. Sales-contingent pay began in Restaurant A at

the beginning of Week 7, in Restaurant B at the beginning of Week 9, and in Restaurant C at the beginning of Week 11.

RESULTS

The results focus on three types of data: the pay the waitpersons received, their productivity, and the labor costs per unit of sales.

Pay

Figure 1 depicts the mean dollars earned per hour by the waitpersons in each pay period at the three restaurants. The mean hourly earnings during baseline data collection were \$2.10, \$2.08, and \$2.17 in Restaurants A, B, and C, respectively. When employees were paid contingently on their gross sales, the mean hourly earnings rose to \$2.72 in Restaurant A, \$2.50 in Restaurant B, and \$2.70 in Restaurant C. These increases in the means of hourly pay were 30% in Restaurant A, 20% in B, and 24% in Restaurant C.

The introduction of performance-contingent pay resulted in increased pay per hour for all 29 waitpersons. The improvements in hourly pay were particularly great for those waitpersons previously paid minimum wage. During baseline, 7 waitpersons were earning the minimum wage in Restaurant A, 6 in Restaurant B, and 3 in Restaurant C. In Restaurant A, the range of increases in hourly pay for those who were previously paid minimum wage was from 31% to 58%, in Restaurant B from 28% to 32%, and from 7% to 75% in Restaurant C. The increases in hourly pay for the 13 waitpersons who were making more than minimum wage during baseline ranged from 11% to 23% for those working in Restaurant A, from 2% to 4% for those in Restaurant B, and from 13% to 33% for those in Restaurant C.

In addition to dollars earned per hour of work, take-home pay was important to waitpersons because pay per hour might have increased without beneficially affecting total dollars earned if increased production decreased the necessity for labor. An examination of take-home pay in relation to hours

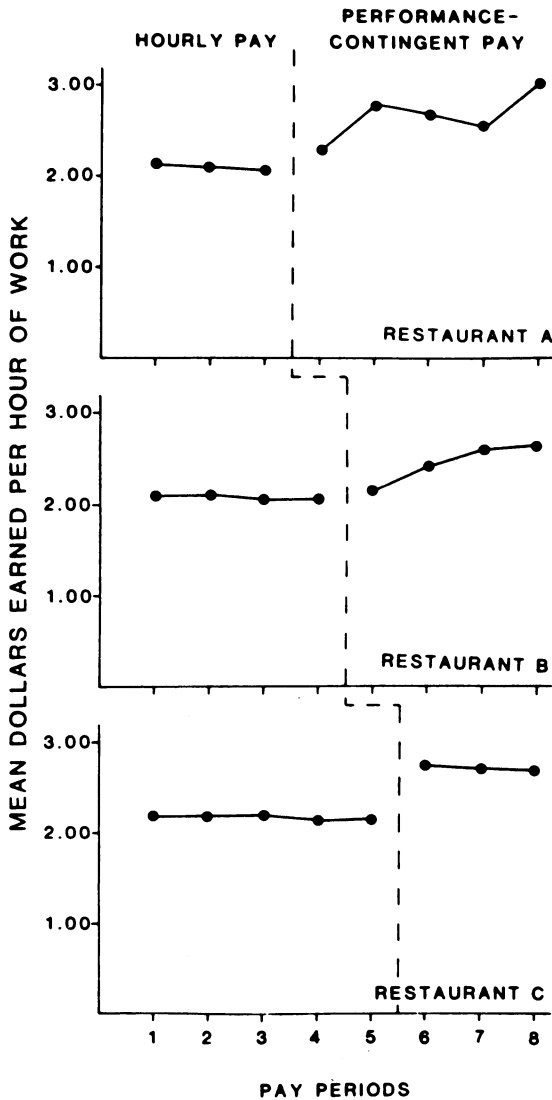


Figure 1. The mean dollars earned per hour of work, averaged over waitpersons in each of the three restaurants, plotted for each pay period.

worked provides data on this question. Seven waitpersons worked more hours and 22 worked fewer hours during the performance-contingent pay condition than they had during hourly pay. All 7 waitpersons who worked more hours earned more take-home pay, with the increases in earnings ranging from 27% to 92%. Thirteen of the waitpersons averaged fewer hours of work but still received higher take-home pay with increases ranging from 1.3% to 46%. Nine waitpersons averaged fewer

hours of work per pay period and received less take-home pay with the decreases in take-home pay ranging from 8% to 46%.

Productivity

Figure 2 contains plots of the amount sold per labor hour during each week, expressed as a percentage of the same measures collected 1 year earlier in each of the three restaurants. During hourly pay conditions, the mean of the sales per labor hour was 118% of mean sales one year earlier in Restaurant A, 116% in Restaurant B, and 113% in Restaurant C. In other words, there were modest increases in this measure from the previous year. At least a part of these increases simply reflected increases in prices of items on the menu. However, the company did not have accurate prices for the previous year; therefore, it was not possible to adjust for price changes.

Following the introduction of the contingent-pay program, there were increases in the means of sales per labor hour to 161% of the previous year's sales in Restaurant A, 137% in Restaurant B, and 154% in Restaurant C. A small part of the increases in sales per labor hour from baseline to the performance-contingent pay periods, less than 1% in Restaurant A, 5% in B, and 4% in C, resulted from increases in the amount bought per customer. The remainder involved increases in the numbers of customers served per labor hour.

A second measure of productivity was the number of customers served per labor hour. However, these data must be treated differently than were those for sales per labor hour, because comparable figures were not available for the previous year. During baseline, the mean number of customers served per labor hour was 14.2 in Restaurant A, 11.9 in B, and 12.9 in C. These figures increased to 17.6, 14.1, and 16.2, respectively. The increases in customers served per labor hour were 24%, 18%, and 26%, respectively.

Labor Costs

Labor costs for waitpersons as a percentage of gross sales are plotted for each week of the experiment in Figure 3. During baseline periods the

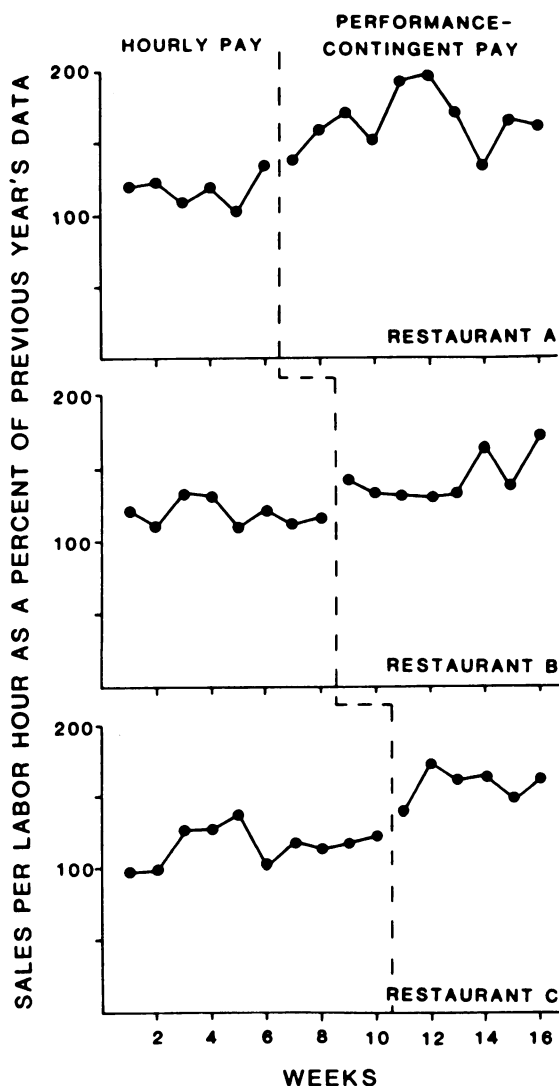


Figure 2. Sales per hour as a percentage of sales per labor hour during the same weeks during the preceding year in each of the restaurants, plotted for each week.

mean of labor costs, averaged over weeks, was 7.8% of gross sales in Restaurant A, 7.2% in Restaurant B, and 7.8% in Restaurant C. After introduction of the contingent-pay program, the means decreased slightly to 7.2% in A, 6.9% in B, and 7.3% in C. However, the data collected during performance-contingent pay clearly do not lie outside the ranges that would be predicted if baseline trends simply continued. The pay of the waitpersons was rarely exactly 7% of gross sales during the perfor-

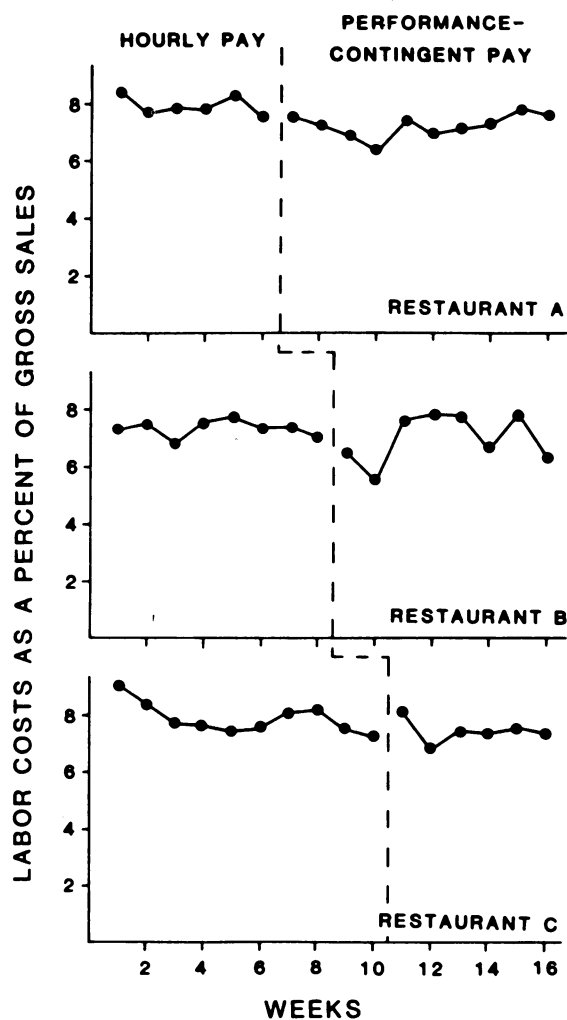


Figure 3. Labor costs as a percentage of gross sales in each of the restaurants, plotted for each week.

mance-contingent pay condition because of the problems, described in the methods section, encountered in making up the waitpersons' paychecks.

DISCUSSION

Performance-contingent pay provided increased hourly pay for all of the waitpersons and greater take-home pay for many of them. This increased pay came from the proceeds of improved production that primarily involved waitpersons' waiting on more customers per hour of work. The pay

increases were financed with no cost for the restaurant owners. However, there were no important decreases in labor costs per dollar of sales. The experimentally controlled demonstration of improved productivity is consistent with the conclusions of most reviews of contingent pay (Patten, 1977). The improved pay with little benefit for company owners either in terms of total labor costs or labor costs per dollar of sales is contrary to the common assumption that such pay methods necessarily benefit company owners or managers at the expense of workers (Dartnell Corporation, 1948).

The assumption that owners benefit at the expense of workers may stem from the apparently common historical practice of "rate chopping" or "rate cutting" in U.S. manufacturing industries (Louden, 1944). Managers installed piece-rate or similar pay methods, and workers became more productive and made more money. Some managers apparently subsequently cut or chopped the amount paid per unit of work, resulting in the workers accomplishing more work for no or little more money than they had previously made under hourly pay. The managers and/or owners, but not the workers, benefited from the increased productivity. The present research provides a clear demonstration that manipulating the proceeds from improved productivity so that owners or managers benefit at the expense of workers is not an inherent characteristic of performance-contingent pay. Given that there is a contingency to cause workers to be more productive than they are when paid by the hour, it should be possible to allocate the benefits resulting from the improved productivity in many ways.

One limit on the allocation of the benefits of improved productivity provided by performance-contingent pay occurs if so little is given to workers that they cease to be more productive and thereby eliminate the benefits. Taylor (1903) noted and warned against poor productivity that might result from inadequate pay or ineffective pay methods. Taylor defined "soldiering" as workers being less productive than they were capable of being and generally assumed this to be a result of inadequate or improperly used pay. "Systematic soldiering" referred to workers affecting, perhaps in rebellion

against rate chopping, each other's behaviors as a means of limiting production. Workers limiting production is well documented and is generally referred to as restriction of output (Mathewson, 1931) and may be at least partly responsible for the doubt that performance-contingent pay consistently provides better productivity than hourly pay.

Some restriction of output is commonly attributed to management practices (e.g., rate chopping) and some to the assumption that there is a limited amount of work to be done and that high levels of productivity will simply lead to a reduction in need for labor. Karl Marx (1867), for example, claimed that increased productivity was undesirable because it was likely to create less demand for labor and therefore would reduce employment and cause a decline in workers' standards of living. Some bases for this view are easy to find. In the present research, the number of labor hours required per dollar of food served and the total number of hours worked by waitpersons declined as waitperson productivity increased following the beginning of performance-contingent pay. Many of the waitpersons worked fewer hours following the beginning of performance-contingent pay even though most of them received greater total take-home pay.

Contrary to Marx's claims, many contemporary economists (e.g., Friedman & Friedman, 1980) argue that the assumed undesirable effects of improved productivity are short sighted because improvements in productivity, when viewed across an entire economy, lead to less expensive goods, more people being able to afford the goods, greater demands for goods, and more employment resulting from the increased demand. Determining whether improved productivity generally provides more or less employment was far beyond the scope of the present research. It is clear, however, that a decline in the hours worked by waitpersons accompanied the increased productivity in all three restaurants. Such declines in required labor resulting from improved productivity could be a problem for workers and companies on a local scale even if the improved productivity is beneficial on the scale of a complete economy.

Many variables, including worker skill, produc-

tion technology, planning and scheduling, the availability of materials, and cooperation among workers, as well as the method of pay, presumably interact to limit productivity and the quantity of benefits to be distributed (International Labour Office, 1954). In the present research, productivity under the contingent pay condition appeared to be limited primarily by the number of customers coming into the restaurants and by the managers' scheduling the waitpersons to work. At the extreme, if there were no customers or if a waitperson was not scheduled to work, that person would make no money. The restaurant managers only slowly adjusted to the greater productivity of the waitpersons and typically scheduled more people to work than were needed to accommodate the number of customers. This imposed a limit on the amount per hour a waitperson could earn. The authors judged that the waitpersons could easily have handled a considerable increase in customer load.

The intervention in the present research included a simple feedback system as well as sales-dependent pay; further research could isolate the effects of these two independent variables. However, in a review of the field research on the effects of feedback in organizations, Balcazar, Hopkins, and Suarez (1985–1986) found little evidence for sustained effects of feedback when used alone, although the reviewers noted that feedback, if used as in the present research, may be useful to augment other reinforcement methods (e.g., pay). Determination of the effects of the method of pay, independently of the feedback, would have little practical utility because the feedback involved so little time and expense. Therefore, research to isolate the effects of the pay and feedback methods would not appear to be promising.

The present research provided some anecdotal data pertinent to several important questions that were not definitively answered. Data were collected to try to estimate the effects on turnover among the waitpersons as a possible objective index of waitperson acceptance of sales-dependent pay. The number of waitpersons leaving employment during performance-contingent pay was lower than the company's historical average. However, a clear def-

inition of turnover was not possible during the course of the experiment because of the nature of restaurant employment. Many waitpersons worked, did not work again for extended periods of time, and then either worked again or never returned to work again with no formal notification. Two waitresses who had announced during the baseline period that they were planning to leave employment with the company continued to work after the installation of the contingent-pay methods, saying that they were able to make more money than they would have if they had left for other employment. Some waitpersons may have sought other or additional employment because of the reduced hours of work available at the restaurants.

There is a common assumption (e.g., Marriott, 1968) that making pay contingent on amount of production leads to a reduction in the quality of production. Customer comment cards were kept on all tables and the counters of the three restaurants. The authors collected the cards turned in during the period of data collection. In no restaurant were there increases in customer complaints following the beginning of performance-contingent pay. However, the number of cards turned in and the comments on the cards often appeared to be more a function of waitpersons' prompting customers who were friends or relatives to fill out comment cards than a function of the quality of service. More elaborate pay methods could include quality of service in the contingency.

Equity of pay is often an important consideration in surveys of workers' opinions about various methods of pay (e.g., Adams, 1963; Finn & Lee, 1972). Two workers commented to the first author that they did not think the contingent pay was fair because it could penalize workers with greater seniority who had been paid relatively more under the hourly pay system. Several waitpersons commented that the contingent-pay method was more fair than hourly pay because people were paid relative to their skill and effort.

The contingent-pay methods obviously affected some waitpersons' preferences for work schedules. During hourly pay a few waitpersons regularly requested work during the hours of the morning and

afternoon when relatively few customers were in the restaurants. During these times, waitpersons on duty spent most of their time leisurely filling shakers, cleaning tables, and preparing sideboards for the next meal time. After the initiation of the contingent-pay method all waitpersons requested work during the times many customers came to the restaurants.

Hopkins (1987) and Fox, Hopkins, and Anger (1987) have suggested that a key to the adoption of behavioral technology may be insuring that all persons involved in purchasing and using that technology benefit from it. Similarly, some proponents of performance-contingent pay have argued that any benefits of improved productivity can and should be distributed so that they benefit workers, management, owners, and customers, with the greatest shares going to workers (Lincoln, 1946). The proceeds from the improved productivity that followed the introduction of contingent pay in the present research were not distributed to all parties involved. Most of the waitpersons obviously benefited from it. Productivity improved as the company owners requested, and a no-cost means of providing raises resulted from the contingent-pay method. However, there were no large decreases in labor costs that would have benefited owners.

One potential disadvantage of the contingent-pay methods for the restaurant managers should be noted. Under the baseline hourly pay methods the managers had wide latitude in giving raises and were rumored to award them on a basis of considerations other than longevity or how effective a waitperson was in serving customers. The managers lost the privilege of giving raises when contingent pay began. This loss may have been responsible for some of the restaurant managers arguing against installation of the pay method throughout the restaurant chain. However, this issue became moot because the owners of the restaurant chain filed for bankruptcy soon after the conclusion of the research. Even though the researchers were not asked to address benefits for the managers and they knew nothing about the financial condition of the company, the opposition and bankruptcy illustrate the importance of considering the benefits of perfor-

mance-dependent pay for all parties involved with an organization.

The present research demonstrates that contingent pay can provide increased pay for the workers involved. With that doubt laid to rest, further research and debate can address the questions of the useful and fair distribution of the proceeds of the improved productivity that can accompany performance-contingent pay. In addition, we suggest that it is premature to assume that performance-contingent pay is generally desirable. Many additional important questions await further research. Obvious questions include determining the effects of contingent pay on such phenomena as health of the workers, competition among workers, the quality of management-worker interactions, the details of waitpersons' behavior, and the satisfaction of waitpersons with the conditions of work.

REFERENCES

- Abernathy, W. B., Duffy, E. M., & O'Brien, R. M. (1982). Multi-branch, multi-systems programs in banking: An organization-wide intervention. In R. M. O'Brien, A. M. Dickinson, & M. P. Rosow (Eds.), *Industrial behavior modification: A management handbook* (pp. 370-382). New York: Pergamon Press.
- Adams, J. S. (1963). Wage inequities, productivity and work quality. *Industrial Relations*, **3**, 9-16.
- Alford, L. P. (1940). *Principles of industrial management*. New York: Ronald Press.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, **1**, 91-97.
- Bailey, J. S. (1987). The editor's page. *Journal of Applied Behavior Analysis*, **20**, 113.
- Balcazar, F., Hopkins, B. L., & Suarez, Y. (1985-1986). A critical, objective review of performance feedback. *Journal of Organizational Behavior Management*, **7**, 65-89.
- Campbell, D. J. (1984). The effects of goal-contingent payment on the performance of a complex task. *Personnel Psychology*, **37**, 23-40.
- Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research and teaching. In N. L. Gage (Ed.), *Handbook of research on teaching* (pp. 171-246). Chicago: Rand McNally.
- Cherrington, D. J., Reitz, H. J., & Scott, W. E., Jr. (1971). Effects of contingent and non-contingent reward on the relationship between satisfaction and task performance. *Journal of Applied Psychology*, **55**, 531-536.
- Copley, F. B. (1923). *Frederick W. Taylor: Father of scientific management* (Vol. 2). New York: Harper and Row.

- Dartnell Corporation. (1948). *Experience of 117 companies with wage incentive plans*. Report No. 561. Chicago: Dartnell Corporation.
- Fine, M. (1973). Work measurement and wage incentives. *Industrial Engineering*, **5**, 49-51.
- Finn, R. H., & Lee, S. M. (1972). Salary equity: Its determination, analysis and correlates. *Journal of Applied Psychology*, **56**, 283-292.
- Fox, D. K., Hopkins, B. L., & Anger, W. K. (1987). The long-term effects of a token economy on safety performance in open-pit mining. *Journal of Applied Behavior Analysis*, **20**, 215-224.
- Freedman, S. C. (1985). Performance-based pay: A convenience store case study. *Personnel Journal*, **64**, 30-34.
- Friedman, M., & Friedman, R. (1980). *Free to choose: A personal statement*. New York: Harcourt Brace Jovanovich.
- Gaetani, J. J., Hoxeng, D. G., & Austin, J. T. (1985). Engineering compensation systems: Effects of commissioned versus wage payment. *Journal of Organizational Behavior Management*, **7**(1/2), 51-63.
- Hopkins, B. L. (1987). Comments on the future of applied behavior analysis. *Journal of Applied Behavior Analysis*, **20**, 339-346.
- International Labour Office. (1951). *Payment by results*. Studies and Reports, New Series, No. 27. Geneva, Switzerland: International Labour Office.
- International Labour Office. (1954). *Higher productivity in manufacturing industries*. Studies and Reports, New Series, No. 38. Geneva, Switzerland: International Labour Office.
- Lewis, L. E. (1960, May). Extent of incentive pay in manufacturing. *Monthly Labor Review*, 460-463.
- Lincoln, J. F. (1946). *Lincoln's incentive system*. New York: McGraw-Hill.
- Locke, E. A., Feren, D. B., McCaleb, V. M., Shaw, K. N., & Denny, A. T. (1980). The relative effectiveness of four methods of motivating employee performance. In K. D. Duncan, M. M. Gruneberg, & D. Wallis (Eds.), *Changes in working life* (pp. 363-388). Chichester, England: John Wiley & Sons.
- Louden, J. K. (1944). *Wage incentives*. New York: John Wiley & Sons.
- Luthans, F., Paul, R., & Baker, D. (1981). An experimental analysis of the impact of contingent reinforcement on salespersons' performance behavior. *Journal of Applied Psychology*, **66**, 314-323.
- Luthans, F., Paul, R., & Taylor, L. (1985). The impact of contingent reinforcement on retail salespersons' performance behaviors: A replicated field experiment. *Journal of Organizational Behavior Management*, **7**(1/2), 25-35.
- Lytle, C. W. (1929). *Wage incentive methods*. New York: Ronald Press.
- Marriott, R. (1968). *Incentive payment systems: A review of research and opinion*. London: Staples Press.
- Marx, K. (1867). *Das kapital: Kritik der politischen oekonomie*. Hamburg: O. Meissner.
- Mathewson, S. B. (1931). *Restriction of output among unorganized workers*. New York: Viking Press.
- Nadworny, M. J. (1955). *Scientific management and the unions, 1900-1932*. Cambridge, MA: Harvard University Press.
- Patten, T. H. (1977). *Pay: Employee compensation and incentive plans*. New York: Free Press.
- Pencavel, J. H. (1977). Work effort, on the job screening, and alternative method of remuneration. *Research on labor economics*. Greenwich, CT: JAI Press.
- Roethlisberger, F. J., & Dickson, W. J. (1939). *Management and the worker*. Cambridge, MA: Harvard University Press.
- Rothe, H. F. (1970). Output rates among welders. *Journal of Applied Psychology*, **54**, 549-551.
- Seiler, E. (1984). Piece rate vs. time rate: The effect of incentives on earnings. *The Review of Economics and Statistics*, **66**, 363-375.
- Sinclair, U. (1911). [Letter to the Editor]. *The American Magazine*, February 24, cited by Copley, F. B. (1923). *Frederick W. Taylor: Father of scientific management*. Vol. 2. New York: Harper and Row.
- Taylor, F. W. (1903). *Shop management*. New York: Harper and Row.
- Taylor, F. W. (1911). *The principles of scientific management*. New York: Harper.
- U.S. House of Representatives. (1912). *Hearings before special committee of the House of Representatives to investigate the Taylor and other systems of shop management under authority of House Resolution 90*. Washington, DC: U.S. Government Printing Office.
- Wyatt, S., Frost, L., & Stock, F. G. L. (1934). *Incentives in repetitive work*. Report No. 69. London: Industrial Health Research Board.
- Yukl, G., Wexley, K. N., & Seymour, J. D. (1972). Effectiveness of pay incentives under variable ratio and continuous reinforcement schedules. *Journal of Applied Psychology*, **56**, 19-23.

Received December 17, 1987

Initial editorial decision March 18, 1988

Revisions received May 19, 1988; June 30, 1988

Final acceptance October 18, 1988

Action Editor, R. Wayne Fuqua